State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

EXPLANATIONS OF LAND USE ATTRIBUTES
USED IN DATABASE FILES ASSOCIATED
WITH SHAPE FILES

Land and Water Use Section

Statewide Planning Branch
Division of Planning and Local Assistance

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Introduction

When performing the field work of each land use survey, the identified land
uses are hand printed onto the field sheets. The land uses codes and their
usage is documented in DWR's Standard Land Use Legends. The hand printed
land use coding are short text strings. The Standard Lands Use Legends were
developed to allow for standard coding of land use data on field sheets.
They were not developed for coding land use information into digital database
structures that can be used in geographic information systems.

During the digitizing process, the codes from the field sheets are not
entered as the same exact text string, but rather as a set of codes in a
database type format. The purpose of this document is to explain in detail
the land use attribute information that is present in the DBF database files
associated with the shape files.

General Explanation of Land Use Data Fields

All shape files that are on DWR's Land Use Data WEB site have identical
attributes structures in the DBF files. In each DBF file, there are 24
attribute fields that are associated with each polygon. They are as follows:

HEADER	DATA TYPE	DESCRIPTION
BL_X:	Number	The X coordinate of the centroid of the polygon
BL_Y:	Number	The Y coordinate of the centroid of the polygon
ACRES:	Number	Acres of the polygon (may or may not be present)
WATERSOURC:	Text	Type of water source used
MULTIUSE:	Text	Type of land use
CLASS1:	Text	Class for the first land use
SUBCLASS1:	Text	Subclass for the first land use
SPECOND1:	Text	Special condition for the first land use
IRR_TYP1A:	Text	Irrigation status for the first land use
IRR_TYP1B:	Text	Irrigation system type for the first land use
PCNT1:	Text	Percent of land associated with the first land use
CLASS2:	Text	Class for the second land use
SUBCLASS2:	Text	Subclass for the second land use
SPECOND2:	Text	Special condition for the second land use
IRR_TYP2A:	Text	Irrigation status for the second land use
IRR_TYP2B:	Text	Irrigation system type for the second land use
PCNT2:	Text	Percent of land associated with the second land use
CLASS3:	Text	Class for the third land use
SUBCLASS3:	Text	Subclass for the third land use
SPECOND3:	Text	Special condition for the third land use
IRR_TYP3A:	Text	Irrigation status for the third land use
IRR_TYP3B:	Text	Irrigation system type for the third land use
PCNT3:	Text	Percent of land associated with the third land use
UCF_ATT:	Text	Concatenated attributes from MULTIUSE to PCNT3

Detailed explanation of Land Use Data Fields

Following is a more detailed explanation of each field and the codes which would be present and when:

BL_X: This is the Y coordinate of the point where the attribute was
            originally digitized in the polygon (always present).

BL_Y: This is the Y coordinate of the point where the attribute was
            originally digitized in the polygon (always present).

ACRES: This is the amount of acres of the polygon, which may or may not
            be present. This acreage was calculated within a raster GIS
            program (GRASS), not within a vector program (ARCINFO or
            ARCVIEW). Differences between raster developed acres and vector
            developed acres are very small, and the difference get smaller as
            the polygon gets larger.

WATERSOURC: This is the type of water source used for irrigation of the
            polygon (if irrigated). For example, in the 1993 DWR Standard
            Land Use Legend, the possible codes are:

            1 – Surface water
            2 – Mixed surface and ground water
            3 – Ground water
            4 – Unknown

            An asterisk (*) will be in this field if the polygon was not an
            irrigated field, or if water source data was not collected for
            the whole survey.

MULTIUSE: This is the type of land use, or how many uses occurred on the
            land. There is always a code in this field. The possible codes
            are:

            S – Single use, meaning it had one use. For example, one crop of
            grain, native vegetation, or urban residential.

            D – Double cropped, meaning two agricultural crops were grown,
            one after the other. For example, grain followed by dry beans.

            T – Triple cropped, meaning three agricultural crops were grown
            sequentially. For example, carrots followed by corn followed by
            sugar beets.

            I – Intercropped, meaning a orchard or vineyard with another crop
            (not trees or vines) planted between the tree or vine rows. For
            example, young almond trees with dry beans planted between the
            tree rows.

            M – Mixed use, used when more than one land use is present in the
            polygon. Because of intermixing, it is sometimes difficult to
            delineate each use separately. For example, a delineated polygon
            may be a mix of 50% urban residential and 50% native vegetation.

CLASS1:   This is the class for the first land use, which is the first
             level of detail for land use identification. All class codes are
             letters, not numerals. Every polygon will have a code in CLASS1.
             Following are example classes:

             G - Grain and hay crops
             R - Rice
             F - Field Crops
             P - Pasture
             UR - Urban residential
             NV - Native vegetation
             E - Entry denied

SUBCLASS1:   This is the subclass for the first land use, which is the second
             level of detail for land use identification. It is not mandatory
             to have a subclass code after a class code. All subclasses are
             numerals, and fall under each class. Following are example
             subclasses:

             Class:
             F - Field Crops

             Subclass:
             1 - Cotton   7 - Grain sorghum
             2 - Safflower   8 - Sudan
             3 - Flax   9 - Castor beans
             4 - Hops   10 - Beans (dry)
             5 - Sugar beets   11 - Miscellaneous field
             6 - Corn (field & sweet)   12 - Sunflowers

             If no subclass has been assigned to the first land use, there
             will be two asterisks ("**") in this field.

SPECOND1:   This is a special condition for the first land use, which is a
             letter. It is not mandatory to have a special condition code
             after a class code. Following are example special conditions:

             A – Abandoned orchards or vineyards
             F – Fallow land
             M – Military areas
             S – Seed crop
             Y – Young non-bearing orchards or vineyards

             If no special condition has been assigned to the first land use,
             there will be an asterisk ("*") in this field.

IRR_TYP1A: This is the irrigation status for the first land use (either
             irrigated or non-irrigated). The letter "i" is used for
             irrigated, "n" for non-irrigated. There will always be a code in
             this field.

IRR_TYP1B: This is the irrigation system type for the first land use. The
             code is a letter.

             Following are example irrigation types, from the 1993 DWR
             Standard Land Use Legend:

             G - Gravity
             M - Micro
             S - Sprinkler
             U - Unknown

             If the polygon is non-irrigated ("n"), there is be an asterisk
             ("*") in this field.

PCNT1:   This is the percentage of land associated with the first land
             use, using numerals. The code "50" means 50%, the code "00"
             means 100%. A single, double, triple, and intercropped ("S",
             "D", "T", and "I") land use will always have "00" (100%) in this
             field. A mixed land use ("M") will always have a code in this
             field also, but it will be less than 100%.

CLASS2:   This is the class for the second land use. It uses the same
             letter codes as CLASS1. If the polygon is a double, triple,
             intercropped, or mixed use ("D", "T", "I", or "M"), there will be
             a code in this field. If the polygon is a single land use ("S")
             there will be two asterisks ("**") in this field.

SUBCLASS2:   This is the subclass for the second land use. It uses the same
             numeral codes as SUBCLASS1. If the polygon is a double, triple,
             intercropped, or mixed use ("D", "T", "I", or "M"), there may or
             may not be a code in this field (a subclass code is not mandatory
             if there is a class code). If the polygon is a single land use
             ("S") or if subclass is not used, there will be two asterisks
             ("**") in this field.

SPECOND2:   This is the special condition for the second land use. It uses
             the same letter codes as SPECOND1. If the polygon is a double,
             triple, intercropped, or mixed use ("D", "T", "I", or "M"), there
             may or may not be a code in this field (a special condition code
             is not mandatory if there is a class code). If the polygon is a
             single land use ("S") or if special condition is not used, there
             will be an asterisk ("*") in this field.

IRR_TYP2A   This is the irrigation status for the second land use. It uses
             the same letter codes as IRR_TYP1A. If the polygon is a double,
             triple, intercropped, or mixed use ("D", "T", "I", or "M"), there
             will be a code in this field. If the polygon is a single land
             use ("S") there will be an asterisk ("*") in this field.

IRR_TYP2B: This is the irrigation system type for the second land use. It
             uses the same letter codes as IRR_TYP1B. If the polygon is a
             double, triple, intercropped, or mixed use ("D", "T", "I", or
             "M"), there will be a code in this field. If the polygon is a
             single land use ("S") there will be an asterisk ("*") in this
             field.

PCNT2:   This is the percentage of land associated with the second land
              use, using numerals. It uses the same numeral codes as PCNT1.
              If the polygon is a double or triple crop ("D" or "T"), it will
              have "00" in this field. If the polygon is an intercropped or
              mixed use ("I" or "M"), there will be a code in this field, but
              will be less than 100%. If the polygon is a single land use
              ("S") there will be two asterisks ("**") in this field.

CLASS3:   This is the class for the third land use. It uses the same
              letter codes as CLASS1 and CLASS2. If the polygon is a triple
              crop ("T"), or is mixed use ("M") with three mixed land uses,
              there will be a code in this field. If the polygon is mixed use
              ("M") with two mixed land uses, or is a single, double, or
              intercropped ("S", "D", or "I") land use, there will be two
              asterisks ("**") in this field.

SUBCLASS3:   This is the subclass for the third land use. It uses the same
              numeral codes as SUBCLASS1 and SUBCLASS2. If the polygon is a
              triple crop ("T"), or is mixed use ("M") with three mixed land
              uses, there may be a code in this field (a subclass code is not
              mandatory if there is a class code). If the polygon is a single,
              double, or intercropped land use ("S", "D", or "I"), is mixed use
              ("M") with two mixed land uses, or if subclass is not used, there
              will be two asterisks ("**") in this field.

SPECOND3:   This is the special condition for the third land use. It uses
              the same letter codes as SPECOND1 and SPECOND2. If the polygon
              is a triple crop ("T"), or is mixed use ("M") with three mixed
              land uses, there may be a code in this field (a special condition
              code is not mandatory if there is a class code). If the polygon
              is a single, double, or intercropped land use ("S", "D", or "I"),
              is mixed use ("M") with two mixed land uses, or if special
              condition is not used, there will be one asterisk ("*") in this
              field.

IRR_TYP3A: This is the irrigation status for the third land use. It uses
              the same letter codes as IRR_TYP1A and IRR_TYP2A). If the
              polygon is a triple crop ("T"), or is mixed use ("M") with three
              mixed land uses, there will be a code in this field. If the
              polygon is a single, double, or intercropped land use ("S", "D",
              or "I"), or is mixed use ("M") with two mixed land uses, there
              will be one asterisk ("*") in this field.

IRR_TYP3B   This is the irrigation system type for the third land use. It
              uses the same letter codes as IRR_TYP1B and IRR_TYP2B. If the
              polygon is a triple crop ("T"), or is mixed use ("M") with three
              mixed land uses, and the third land use is irrigated (" i"), there
              will be a code in this field. If the polygon is a single,
              double, or intercropped land use ("S", "D", or "I"), is mixed use
              ("M") with two mixed land uses, or if the third land use in non-
              irrigated ("n"), there will be one asterisk ("*") in this field.

PCNT3:   This is the percentage of land associated with the third land
             use, using numerals. It uses the same numeral codes as PCNT1 and
             PCNT2. If the polygon is a triple crop ("T") it will have "00"
             in the field. If the polygon is mixed use ("M") with three mixed
             land uses, there will be a code in this field, but will be less
             than 100%. If the polygon is a single, double, or intercropped
             land use ("S", "D", or "I"), or is mixed use ("M") with two mixed
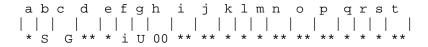   land uses, there will be two asterisks ("**") in this field.

UCF_ATT: This field contain the concatenated attributes starting from the
             MULTIUSE field to the to PCNT3 field.

Detailed Examples of Land Use Codes

This section will provide ten examples of use of DWR's land use codes. For each example, there will be a text description of the land use, the code which would be entered on a survey field sheet, and the resultant codes that would be in a DBF files associated with the shape file. The codes will be those used with the DWR Standard Land Use Legend dated 1993, for those surveys for the period 1993 through 1997.

The codes used in the DBF files will be presented as a string of characters, according to the following structure:

```
 a b c  d  e f g h  i  j  k l m n  o  p  q r s t
| | |  |  | | | |  |  |  | | | |  |  |  | | | | |
 * S  G ** * i U 00 ** ** * * * ** ** ** * * * **
```

Where:

Field Letter	# of Characters	Field Name
a	1	WATERSOURC
b	1	MULTIUSE
c	2	CLASS1
d	2	SUBCLASS1
e	1	SPECOND1
f	1	IRR_TYP1A
g	1	IRR_TYP1B
h	2	PCNT1
i	2	CLASS2
j	2	SUBCLASS2
k	1	SPECOND2
l	1	IRR_TYP2A
m	1	IRR_TYP2B
n	2	PCNT2
o	2	CLASS3
p	2	SUBCLASS3
q	1	SPECOND3
r	1	IRR_TYP3A
s	1	IRR_TYP3B
t	2	PCNT3

Following are the detailed examples of DWR's land use coding:

1.   Irrigated cotton, without water source and unknown irrigation type.

        Field Sheet Code:

            F1

        Database codes:

            *S F 1*iU00******************

2.   Single crop of non-irrigated grain.

       Field Sheet Code:

          nG

       Database codes:

          *S G***n*00******************

3.   Fallow land within a truck crop area with facilities for irrigation
      (irrigation type not identified and water source data not collected).

       Field Sheet Code:

          T-F

       Database codes:

          *S T**FiU00******************

4.   Urban residential, with single family homes with lot sizes greater than
      1 acre and up to 5 acres.

       Field Sheet Code:

          UR1

       Database codes:

          *SUR 1*n*00******************

5.   Double crop of irrigated grain followed by irrigated corn, without
      water source and unknown irrigation type.

       Field Sheet Code:

          (G)F6

       Database codes:

          *D G***iU00 F 6*iU00*********

6.   Young irrigated almonds intercropped with irrigated dry beans without
      water source and unknown irrigation type. Dry beans cover about 50
      percent of the field.

            Field Sheet Code:

                  D12-Y/F10

            Database codes:

                  *I D12YiU00 F10*iU50*********

7.   Triple crop of irrigated lettuce, followed by irrigated cabbage,
      followed by irrigated lettuce, without water source and unknown
      irrigation type.

            Field Sheet Code:

                  (T8)(T23)T8

            Database codes:

                  *T T 8*iU00 T23*iU00 T 8*iU00

8.   Mixed land use of 40% irrigated peaches (unknown irrigation type), 20%
      native vegetation, and 40% urban residential, without water source.

            Field Sheet Code:

                  D5-40%
                  NV-20%
                  UR-40%

            Database codes:

                  *M D 5*iU40NV***n*20UR***n*40

9.   Young irrigated walnuts intercropped with dry beans, irrigated by
      sprinkler with surface water as the water source.

            Field Sheet Code:

                  D13-Y/F10(S)1

            Database codes:

                  1I D13YiS00 F10*iS00*********

10. Double crop of sprinkler irrigated grain, followed by gravity irrigated corn, with mixed surface and groundwater as the water source.

    Field Sheet Code:

    (G-Ⓢ)F6-Ⓖ2

    Database codes:

    2D G**iS00 G***iG00**********